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### **An Annotated List of the Pteridophytes of San Luis Obispo County, California**

ROBERT F. HOOVER

This list represents a small part of the work on a county flora, which has been in progress for nearly twenty years. Most of the specimens here cited are in the herbarium of the California Academy of Sciences,<sup>1</sup> where most of the preparation of this paper was done. Specimens cited without indication of collector are mine.

San Luis Obispo County is in coastal southern California, above Santa Barbara County. The region is largely one of low mountains, both adjacent to the coast and inland, with peaks rising to approximately 4300 feet. The principal ranges are the Santa Lucia Mountains in the northwest, the La Panza

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<sup>1</sup>The officers and staff of the California Academy of Sciences, particularly Mr. John Thomas Howell, Curator of Botany, were most helpful in making facilities available and in various other ways. Thanks are also due my wife for secretarial and other help, not only in preparing this report, but in many phases of the entire project.

Mountains in the south, and the Temblor Mountains, which form the eastern border of the county. A subtropical dry or "mediterranean" climate prevails. The summers are hot, the winters mild, and usually light rain falls during the winter season.

POLYPODIACEAE

*POLYPODIUM CALIFORNICUM* Kaulf.

Common in rocky places from the coast eastward to the La Panza Range.

Whether var. *kaulfussii* D. C. Eaton, a variant with thicker leaves growing in exposed coastal sites, occurs this far south is questionable. Plants from an ocean bluff at San Simeon (6651) and from the coast just south of the Monterey County line (6676) are of the typical variety, with thin leaves.

*POLYPODIUM SCOULERI* Hook. & Grev.

North slope of Morro Rock, *Robert M. Lloyd* 3378. Hybrids with *P. californicum* were also found here.

*PTERIDIUM AQUILINUM* (L.) Kuhn. Bracken.

Common in coastal woodlands (less often in exposed places, where it is dwarfed), in woods in the Santa Lucia Mountains, and occasional in sheltered, shaded places east of the Salinas River: Rocky Canyon near Atascadero. Plants growing wild in Great Britain which I saw were pubescent, just like the plants in western North America. There seems little point, therefore, in following authors who have called our plants var. *pubescens* Underw. or var. *lanuginosum* (Bong.) Fernald.

*PITYROGRAMMA TRIANGULARIS* (Kaulf.) Maxon. Goldback Fern.

Unquestionably our commonest fern in the wooded hills and rocky places throughout the Santa Lucia, San Luis, and La Panza Ranges and the hills between. It occurs even in exceptionally sheltered and shaded spots in the northern Temblor Range. The following less common varieties are noticeable, but do not have very much geographic significance.

Variety *semipallida* J. T. Howell is a "silverback" fern, having white instead of yellow powder on the lower leaf surfaces. It is found in the northern Sierra Nevada, and apparently also from Del Norte County to San Diego County, including the Santa Barbara Islands. Alt and Grant (1960, p. 161) cited collections from Santa Rosa and Santa Cruz Islands as subsp. *viscosa* (Nutt. ex D. C. Eaton) Alt & Grant; but the specimens which I have examined from those islands, if having the backs of the leaves white, showed none of the resinous secretion visible in plants from farther south. There is in fact no readily apparent way to distinguish these specimens from topotype material of var. *semipallida*. Some of the plants in the Santa Lucia Mountains, especially in Lopez Canyon, have the look of var. *semipallida* when fresh, but after drying the powder appears pale yellow rather than white.

Variety **viridis** Hoover, var. nov.<sup>2</sup> has the backs of the leaves bearing small and sparse waxy granules. Less green than the type specimen, but still characterized by the sparsity of yellow wax, are the following collections: Sycamore Canyon, La Panza Range, *Twisselmann* 2513; Ravenswood, Santa Cruz Island, *J. T. Howell* 6231; Aptos Creek, Santa Cruz Co., *Peñalosa* 1487; Cobb Mountain, Jordan Park, Lake Co., *M. S. Jussel* 10; between Pinecrest and Cow Creek, Tuolumne Co., *J. T. Howell* 29010. This "greenback" fern, as it may very aptly be called, looks quite distinctive among the associated plants. Without magnification it seems to lack any waxy powder, but a lens reveals scattered granules which do not conceal the green surface.

**WOODWARDIA FIMBRIATA** J. E. Smith.

Wet places around springs and along small streams, mostly in shaded, sheltered stations, near the coast and in the Santa Lucia Mountains. This plant is notably plentiful in the upper

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<sup>2</sup>Foliis in superficie dorsali granulis ceraceis parvis et sparsis praeditis. Type: Tassajera Creek, San Luis Obispo County, California, on wooded slope, mixed with "goldback" and "silverback" ferns, May 13, 1964, *Hoover* 8819.

part of Lopez Canyon, where there are magnificent natural ferneries. After once becoming established, plants may persist where there is no surface indication of moisture, as on a rhyolite outcrop on the coast east of Avila.

*ADIANTUM PEDATUM* L. Five-fingered Fern.

Cool, permanently moist, more or less shaded banks: upper Lopez Canyon (plentiful); Coon Creek in San Luis Range; coast north of San Carpoforo Creek. Californian plants can be closely matched by specimens from the eastern states; therefore I do not believe that the name var. *aleuticum* Rupr. should be used for our plants, as is done by most recent authors.

*ADIANTUM CAPILLUS-VENERIS* L. Maidenhair Fern.

Rocky banks kept permanently moist by seepage: first ravine north of San Carpoforo Creek; apparently also in upper Lopez Canyon (plants very few, sterile, and in poor condition). This is an evergreen species, in contrast to *A. jordanii*.

*ADIANTUM JORDANII* C. Muell. California Maidenhair.

Wooded or rocky slopes in summer-dry places, usually in shade: common from near the coast eastward through the La Panza Range. Plants of this species grow best when rooted in a soil composed largely of decomposed leaves. This species is summer-dormant in nature, but if planted in suitable soil and judiciously watered, it will become evergreen.

*DRYOPTERIS ARGUTA* (Kaulf.) Watt. California Wood Fern.

Common in shaded woods from the coast eastward to the La Panza Range.

*ATHYRIUM FILIX-FEMINA* (L.) Roth var. *SITCHENSE* Rupr. Lady Fern.

Wet places along the coast: near Piedras Blancas Point (7327).

I have found variety *californicum* Butters in Hazard Canyon, in a moist thicket (7368). Although outside the normal area of the variety, as recorded by Munz (1959, p. 43), the specimen is definitely referable to var. *californicum*, having the branches of the rachis puberulent rather than scaly.

POLYSTICHUM MUNITUM (Kaulf.) Presl. Sword Fern.

Shaded, rather moist places: San Luis Range, especially in the Coon Creek watershed, north slope of Morro Rock, and near the coast from Cambria northward; densely wooded or sheltered, rocky places in the Santa Lucia Mountains.

Subsp. *curtum* Ewan occurs back from the coast, often in drier sites, such as Lopez Canyon (8813) and near Rocky Butte. Perhaps most of the sword ferns in the Santa Lucia Range proper, as distinguished from the coastal hills, belong to this less scaly variant. Insufficient attention has so far been given to the plants in their various habitats.

POLYSTICHUM DUDLEYI Maxon.

Damp shaded, rocky banks: upper part of Lopez Canyon (8807); coast just south of the Monterey County line (6672). Wagner (1963, p. 8) has said, "*Polystichum dudleyi* is so similar to the Hawaiian *P. haleakalense* that it may be the same species."

PELLAEA ANDROMEDIFOLIA (Kaulf.) Fée var. ANDROMEDIFOLIA.  
Coffee Fern.

Openly wooded or rocky slopes, common in the western part and occasional in less extremely arid localities of the eastern part of the county.

Provisionally referred to var. *pubescens* D. C. Eaton is a distinctive local form found on serpentine rock around San Luis Obispo. The plants are smaller than typical, form a dense clump of leaves, and lack the extensively creeping rhizomes of the typical variety. The rachises and their branches are usually microscopically hairy, but this is not an invariable feature. Similar plants have been seen from San Clemente Island off southern California and from Cedros Island, Baja California.

PELLAEA MUCRONATA D. C. Eaton var. MUCRONATA. Bird's-foot Fern.

Rocky places, most common in the central part of the county; not usually found west of the Santa Lucia Mountains, except for a local variant on the sandstone hills north of Arroyo Grande

and east of Pismo Beach. This variant is very vigorous, with many leaves, has leaflets almost twice as long as the typical variety, and its leaves remain greener in age. Herbarium specimens which resemble it have been seen from Santa Barbara and Ventura Counties.

Another variety occurs along the upper San Juan River (*Rodin 7127*). It is var. *californica* (Lemmon) Munz & Johnston, which Maxon called *P. compacta*.

CHEILANTHES CALIFORNICA (Hook.) Mett.

Occasional in sheltered, rocky places, mostly on sandstone or granite, and not ordinarily on serpentine: scattered through the western half of the county, seldom abundant.

CHEILANTHES SILIQUOSA Maxon.

Upper Chorro Creek, among serpentine rocks (6569 in part); Cypress Swamp, Cypress Mountain (*Twisselmann 3230*). In the California Coast Ranges, the distribution of this species is closely correlated with that of serpentine. The same holds true across the continent in Quebec. But in the Sierra Nevada and in most of the remainder of the wide range of this species, it grows on many other kinds of rock.

Forma **carlotta-halliae** (Wagner & Gilbert) Hoover, comb. nov.<sup>3</sup> grows with typical *C. siliquosa* in the region of upper Chorro Creek (6569 in part, *Condit* in 1910), and there it is locally plentiful. The authors of *C. carlotta-halliae* correctly stated that it is intermediate between *C. siliquosa* and *C. californica*, and drew the conclusion that it originated by hybridization between the two. However, examination of many specimens shows that it is not a rare and local plant of the Coast Ranges, as previously supposed, but is mixed in several collections of *C. siliquosa* from the higher Sierra Nevada, and apparently occurs even in Quebec (*Fernald & Collins 150*). Frequently on a single leaf some of the pinnules correspond to typi-

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<sup>3</sup>Basionym: *Cheilanthes carlotta-halliae* Wagner & Gilbert, Amer. J. Bot. **44**: 738. 1957.

cal *C. siliquosa* in having a continuous marginal indusium, while others have the deeply lobed or interrupted indusium of *C. siliquosa* f. *carlotta-halliae*. My conclusion is that the latter is neither a distinct species nor a proved interspecific hybrid, but rather a sporadic variant which might be found by careful search over much of the extensive area where *C. siliquosa* occurs. Sierra Nevada collections in which some or all of the pinnules are referable to f. *carlotta-halliae* include: talus slope south of Gifford Lakes, Lassen Park, *Gillett & Leschke* in 1957; Jonesville, Butte Co., *E. B. Copeland* 328; Vernal Falls, Yosemite Valley, *C. F. Saunders* in 1906; between Pinto Lake and Black Rock Pass, Tulare Co., *J. T. Howell* 17337.

CHEILANTHES COOPERAE D. C. Eaton.

Crevices in limestone or calcareous sandstone: Franklin Creek, Camp Natoma in Adelaida district, according to *Hardham* (1960, p. 129).

CHEILANTHES CLEVELANDII D. C. Eaton. (*C. covillei* Maxon).

Rocky places, most commonly on sandstone or granite: summit of Mount Bishop near San Luis Obispo (*R. J. Rodin*); hills near upper Salinas River; more frequent in the La Panza Range, but not common even there; upper San Juan River (*Rodin* 7126). Of the plants found in this county, only a collection from Pine Mountain in the La Panza Range (6584) shows the creeping rhizomes with comparatively widely spaced leaves which have been supposed to characterize *C. clevelandii*. The rest are more closely tufted, corresponding to *C. covillei*, but it seems most unlikely that two different species are involved. Since I find a continuous range of variation and no geographic separation of the plants into distinguishable groups, I include all collections under the earlier-published name.

CHEILANTHES INTERTEXTA (Maxon) Maxon.

East of the Middle Branch of Huerhuero Creek, six miles south of Creston, tightly wedged in crevices of granite (6578 in 1946). The only known station for the species in the county was obliterated by road-building operations about 1950.

## CYSTOPTERIS FRAGILIS (L.) Bernh.

Rare locally, in shaded, moist places: between Rocky Butte and Pine Mountain above San Simeon (8014); Garcia Mountain south of Pozo; trail from Stoney Creek to Colwell Mesa (7968).

## MARSILEACEAE

## MARSILEA VESTITA Hook. &amp; Grev.

Rare in depressions which are flooded during the growing season but often dry in summer; rare in the upper Salinas Valley: formerly at Atascadero Lake, according to F. M. Essig; seven miles southeast of Santa Margarita (8169). At the latter locality, where both *Marsilea* and *Pilularia* were collected on May 11, 1952, no trace of either could be found on the same date in 1964.

## PILULARIA AMERICANA A. Braun

Beds of vernal pools, which usually become very dry in summer, in the upper Salinas Valley: near Estrella (*Eastwood & Howell* 4201); seven miles southeast of Santa Margarita (8170). Easily overlooked and probably of more frequent occurrence.

## SALVINIACEAE

## AZOLLA FILICULOIDES Lam.

Ponds, pools, and sluggish streams: noticed particularly in Los Osos Valley and among the dunes south and west of Arroyo Grande; Trout Creek east of Santa Margarita. In late summer the surface of the water may become red from solid masses of this plant.

## EQUISETACEAE

## EQUISETUM TELMATEIA Ehrh.

Common near the coast in moist ground, and extending into canyons of the Santa Lucia Mountains. When once established, it may spread by its creeping rhizomes into drier ground or persist when the soil becomes drier. Californian plants are generally called var. *braunii* Milde, but it is not clear just how they differ from the Old World typical form of the species.

**EQUISETUM ARVENSE L.**

In a low, swampy place just north of Piedras Blancas Point (7768).

**EQUISETUM LAEVIGATUM A. Braun.**

Occasional in moist places in or near the Santa Lucia Range: between Rocky Butte and Pine Mountain; forks of San Simeon Creek; Santa Rita Creek; Morro Creek; Serrano Canyon; Alamo Creek near the Cuyama River. Following the recent work of Hauke (1962a, p. 34) I place *E. kansanum* Schaffn. and *E. funstonii* A. A. Eaton in synonymy under *E. laevigatum* as inconsequential variants.

**EQUISETUM FERRISSII Clute.**

Moist places near the coast from Villa Creek between Cayucos and Cambria to Morro Creek, and probably overlooked elsewhere. These plants, according to Hauke (1962b, p. 61) are hybrids between *E. laevigatum* and *E. hyemale*. In general appearance some individuals resemble more closely one of the presumed parents, some the other.

**EQUISETUM HYEMALE L. var. AFFINE (Engelm.) A. A. Eaton.**

Low, moist places near Oceano (6422) and Arroyo Grande, and probably elsewhere. The species is insufficiently collected, and some specimens of it can readily be confused with robust plants of *E. ferrissii*. Hauke (1962b, p. 60) has referred all North American plants of the species to var. *affine*, although there is complete intergradation with the typical Eurasian form.

## SELAGINELLACEAE

**SELAGINELLA BIGELOVII Underw.**

Common in rocky places, on sandstone, serpentine, granite, etc., from the coast eastward through the La Panza Range.

## ISOETACEAE

**ISOETES NUTTALLII A. Braun.**

In damp soil of meadow between Rocky Butte and Pine Mountain, Santa Lucia Range (7897).

*ISOETES ORCUTTHI* A. A. Eaton.

In moist swales in sandy soil under pines at Cambria (6948, 7855). The plants which I have identified as *I. orcuttii* may simply be individuals of *I. nuttallii* which average smaller in all of their parts. In any case, size differences do exist between the plants at Cambria and those in the mountains above.

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**Native Ferns in a Tennessee Wild Garden**

HELEN BULLARD KRECHNIAK

Ferns are so plentiful on the Cumberland Plateau in Tennessee where I live that years ago I had dozens brought in from the woods to plant about our log cabin on a wooded hillside. But not until we built a small pond in the ravine behind the cabin and cleared the brush and weed trees from the surrounding hills did I begin my long-cherished plan to develop this area as a wild landscape. Native ferns, it seemed to me, would be the best, as well as the cheapest, means of enhancing the natural beauty of the area. Used with the wealth of Mountain Laurel, Rhododendron, Flame and Pink Azalea, equally available, and some already there, ferns should heighten the effect of the wild landscape. Dogwood is everywhere!